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08/941,170 09/30/97 MCFARLAND

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EXAMINER

ERIC M. DOBRUSIN, ESD.
RADER, FISHMAN & GRAUER, PLLC
1533 N. WOODWARD AVENUE
SUITE 140
BLOOMFIELD HILLS MI 48304

RICIGLIANO, J

ART UNIT	PAPER NUMBER
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1648

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9

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 08/941,170	Applicant(s) MacFarlan et al
Examiner Joseph W. Ricigliano Ph. D.	Group Art Unit 1648

Responsive to communication(s) filed on Aug 26, 1998

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Qua* 1035 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

Claim(s) 1-40 is/are pending in the application

Of the above, claim(s) 3, 4, 16-22, and 26-38 is/are withdrawn from consideration

Claim(s) _____ is/are allowed.

Claim(s) 1, 2, 5-15, 23-25, 39, and 40 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Election/Restriction

1. Applicants' election of group I species i with traverse in their faxed response received 8/26/98 (paper number 8) is noted. The claims readable thereon are 1, 2, 5-15, 23-25 and 39-40. The examiner thanks applicants for indicating the inadvertently misplaced comma in the restriction requirement. In fact claims 1, 1012, 13... were intended to be claims 1, 10, 12, 13... as applicant noted. Applicants' traversal is on the ground(s) that the apparatus as claimed would have to contain additional elements to be suitable for screening. This is not found persuasive because the apparatus as claimed could be used to screen the array for dye binding for example. In this case one could for instance introduce the substrate into a bath containing the dye or add the dye to the bath of the apparatus as set forth in claim 12.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 3, 4, 16-22 and 26-38 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in Paper No. 8.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1, 2, 5-15, 23-25 and 39-40 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the deposition of electroplatable materials, does not reasonably provide enablement for one or more source materials. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to utilize the invention commensurate in scope with these claims.

Claims 1, 2, 5-15, 23-25 and 39-40 are directed toward apparatus for applying source materials to a spatially addressable array. The disclosure teaches that source materials can be elements, compounds, chemicals, molecules etc. at page 9 of the specification. However, the application of biological molecules, redox sensitive molecules, and numerous other compounds such as diamonds for example do not appear to be within the scope of reasonable experimentation. The factors to be considered in a determination of undue experimentation are disclosed in *In re Wands*, (U.S.P.Q. 2d 1400 (CAFC 1988). The factors to be considered including: the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the predictability of the art and the breadth of the claims.

Contrary to applicants assertions on page 9 a number of factors would prevent one of skill in the art from practicing the invention without undue experimentation, these are summarized as follows:

- 1) The specification fails to give adequate direction and guidance as to how to apply biological sensitive molecules, redox sensitive molecules and numerous other compounds such as diamonds

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those

for example (especially, which require specific conditions to maintain their activity such as nucleic acids, membrane proteins, enzymes, prostaglandins, thromboxanes...) to the array.

- 2) Applicants have failed to provide any working examples of the use of their array with any sensitive biological or redox sensitive molecules (see applicants' discussion in example 4).
- 3) The breadth of the claims encompasses all known materials
- 4) The state of the prior art is such that inorganic compounds (including metals and metal oxides) and organic anodizing agents are frequently applied to electrodes.
- 5) The art is inherently unpredictable because each biologically sensitive substance or redox sensitive substance will require different condition for stability.

Therefore, while it is true that the level of skill in the art is high, it would require undue experimentation to utilize the invention commensurate in scope with that claimed in the absence of guidance by the applicant as set forth above.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 5-15, 23-25 and 39-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 5-15, 23-25 and 39-40 recite "a source material" at page 9 of the specification applicants definition encompasses every known material in the universe therefore it is unclear

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what is or is not a source material. Moreover, the definition of source materials at page 9 of the specification includes materials that are “ablated.” In that ablated means to remove in one form or another it is completely unclear how an ablated material can be a source material.

Claims 39 and 40 recite a means for testing associated with said plurality of electrodes. This is vague and indefinite because it is unclear what limitations apply to “associated with.” Therefore, it is not possible to determine the metes and bounds of the inventions as claimed.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 9, 10, 12, 13 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Faulkner [US 4,422,788].

Faulkner teaches an electroplating apparatus for applying a plating material in a spatially addressable array (column 4 lines 56-68). The electroplating apparatus is comprised of a source material (the material to be plated) and a potential assembly (the plating head) for applying a spatially varying potential causing components of said source material to deposit at spatially addressable predefined sites (annular tracks). Faulkner teaches the plating apparatus is disposed in an electroplating tank containing plating electrolyte, which reads on the housing and bath of

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claims 12 and the solutions of claims 9 and 13. In that the apparatus forms annular tracks, it reads on the patterns of claim 23. In that the media is formed on polymeric supports, Faulkner reads on claim 10. Therefore, Faulkner anticipates the invention of claims 1, 2, 9, 12, 13 and 23.

9. Claims 1, 2, 5, 8-10, 12, 13 and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Fabel et al [US 4,402,000].

Fabel et al. teaches electrographic apparatus for applying toner (which reads on a source material) to form a pattern on a substrate (recording surface part number 5 and 6). The apparatus utilizes a stylus recording electrode (part number 1) which reads on a potential assembly which has a linear array of electrodes for providing a spatially varying electrical potential across said substrate, where a different potential may be applied to each electrode (i.e. ON/OFF; col. 9 line 50 to col. 10 line 10). Therefore, Fabel et al anticipates claims 1, 2 and 5.

Because each electrode corresponds to a spatially addressable region Fabel et al anticipates claim 8. In that toner is a homogeneous mixture it constitutes a solution as required by claim 9 (note solution do not have to be liquids). The surface can be made from polyester (col. 16 example 3) which reads on claim 10. In that an electrographic apparatus produces an image pattern (col. 1 lines 15-24) Fabel et al reads on claim 23. In that numerous toners are available commercially and are compatible with the electrographic apparatus, of Fabel et al reads on claim 24 (col 9 lines 18-34). In that the apparatus of Fable et al can have a stylus with up to 200 styli/cm the apparatus reads claim 25 (col 10 lines 3-9). Therefore, Fabel et al anticipates the invention of claims 1, 2, 5, 8-10, 12, 13 and 23-25.

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10. Claims 1, 2, 5, 8, 9, 12 and 23-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kubelik [US 5,450,103].

Kubelik et al teaches an electrographic apparatus employing a two-dimensional array of targeting electrodes (see figures 5-7 and the abstract). Electrographic images are developed with a powder or pigmented liquid suspension (which reads on a source material, column 1, lines 14). In that each electrode may be operated independently (ON/OFF) and in conjunction with switching unit 93 and/or a voltage amplifier where by the bias voltage may be controlled, a different potential may be applied the electrodes. Therefore, Kubelik anticipates the invention of claims 1, 2, 5, 9 and 12, 13. Because the electrodes are fixed in an array they correspond to addressable predefined locations as required by claim 8. Because an electrographic apparatuses are used to form images on a substrate, Kubelik anticipates the patterns required in claims 23. In that electrographic apparatus can achieve up to 300 DPI (column 1 lines 50-55) and that numerous toners are available that can be deposited by the apparatus described by Kubelik, the invention of Kubelik anticipates claims 24-25.

11. Claims 1, 2, 9, 12, 13, and 23-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Payne [US 4,318,608].

Payne discloses an electrostatic photocopier which applies a toner (source material) using a potential assembly which applies a spatially varying potential (residual electrostatic charge) across a substrate (paper) which causes the toner to deposit at spatially addressable predefined locations (those of the image pattern being copied) see Col 1 lines 10-30. The apparatus has a

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bath of toner and a housing (see figure1), which reads on the limitations of claims 9, 12 and 13.

Because photocopy apparatus are used to form images on a substrate, Payne anticipates the patterns required in claims 23. In that photocopy apparatus can resolve typical type and that numerous toners are available that can be deposited by the apparatus described by Payne, the invention of Payne anticipates claims 24-25.

12. Claims 1, 2, 9, 12, 13 and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Imamura [US 5,679,234].

Imamura teaches the formation of miniature pattern wells on a semiconductor wafer through selective electroplating. Imamura teaches the use of an electroplating apparatus (see figure 4 C) which can apply a source material (e.g., gold) using a bath containing an ionic solution and a potential assembly which applies a spatially varied potential (due to the presence of a mask on the substrate) across the substrate which cause the source material to be deposited as a spatially addressable array (see figure 4F for example). Therefore, Imamura anticipates the invention of claims 1, 2, 9, 12, 13, 23. In that the semiconductor architecture can have structures as small as 1 μ M (column 1, lines 25-28) and that numerous metals can be plated (deposited) using an electroplating apparatus, the invention of Imamura anticipates claims 24-25.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicants are advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura.

See the teaching of Imamura as applied to claims 1, 2, 9, 12, 13, and 23-25 under 35 U.S.C. 102(b) *supra*. In addition to the teachings above Imamura teaches the substrate is a semiconductor wafer (column 3 lines 36-43) and that the electrodes are sputter titanium/platinum (column 3 lines 50-56). Imamura does not specifically recite the composition of the semiconductor wafer.

It would have been *prima facia* obvious to one of ordinary skill in the art at the time the invention was made to utilize a silicon base wafer in the apparatus taught by Imamura because silicon wafers are standard substrates in the semiconductor art. One of ordinary skill in the art would have been motivated to do so in order to produce the micro architectures described by Imamura on a typical semiconductor. One of ordinary skill in the art would have reasonably expected to be successful because the use of silicon based wafers for microchips are standard in the art and the methods of producing and handling them are also standard in the art.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph W. Ricigliano Ph. D. whose telephone number is (703) 308-9346.

The examiner can be reached on Monday through Thursday from 7:00 A.M. to 5:30 P.M.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0196.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald E. Adams Ph. D., can be reached at (703) 308-0570.

Joseph W. Ricigliano Ph. D.



PONNATHAPURA ACHUTAMURTHY
PRIMARY EXAMINER
GROUP 1800